

Supplementary material for

Eastern quoll (*Dasyurus viverrinus* Shaw, 1800): a review of recent sightings on mainland Australia

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Table S1. Summary of credible sightings received during this review and other records from the literature or databases (all locations are in NSW unless otherwise indicated). Records from the literature or databases are lacking in detail or are for other reasons questionable and could not be assessed for accuracy have been included in this table but are not mapped in Figure 1. Locations that are mapped in Figure 1 are marked with a ^ in the reliability field. Observers marked with an * were contacted as part of this review and were able to adequately describe the sighting and provided a credible account consistent with an eastern quoll. For sightings not already in the public domain and where observers could not be contacted to seek permission, the name of the observer has been withheld as required by the *Privacy and Personal Information Act 1998* for records held in Bionet (and as a precaution this has been extended to all sightings).

Reliability codes are as follows:

H = high

The sighting meets many (but not all) of the validity criteria. Sightings in this category were typically made by one or more skilled observers and in all cases the observers had prior knowledge of both species of quolls. Detailed accounts including one or more diagnostic features of eastern quoll were observed and recorded. The duration of the sighting and the conditions allowed the observers to make an accurate identification. Observer had access to good quality information (e.g. viewed captive animals or consulted reference collections after the sighting) or previous experience with quolls. These sightings all appear on the Map in Figure 1.

M = medium

The sighting meets many (but not all) of the validity criteria. Typically the observer was aware that spotted-tail quolls remain on mainland Australia and eastern quolls possibly remain on mainland Australia but the observer only had experience observing spotted-tail quoll. While diagnostic feature were reported there was still some doubt about the identification (e.g. due to the use of lack of tail spotting or size a diagnostic feature). These sightings all appear on the Map in Figure 1.

L = Low

Only a few of the validation criteria were met. The observer was confident that the sighting was of an eastern quoll not a spotted-tail quoll. The observer either lacked formal training, the conditions at the time of the sighting were poor, the observation was of limited duration or the detail of diagnostic features was absent. These sighting do not appear on the Map in Figure 1.

U = Unknown

This category was assigned to records documented elsewhere (e.g. Bionet or the literature) where the available detail was not sufficient to allow validation. These sightings were only mapped when a previous review of the sighting appears to have occurred.

X = Unlikely

Assigned to sightings that have been reported elsewhere (literature or databases) which are highly unlikely to be a wild eastern quoll.

Source	Date	Observers	Location and other notes	Reliability Code
Current study	3:29am 24 July 2013	2 anonymous observers*	On 24 July 2013 at 3:29am two observers (who wish to remain anonymous, although the identity is known to BDH) were travelling in a car on Imlay Rd in the Nungatta area . The photographer reported that a quoll was observed running oddly beside the road. One of the observers has previously hand-reared eastern quolls (so is familiar with the species and skilled at handling them) and has previously worked with wildlife in a professional capacity. This observer has a good understanding of both species of quoll and the features used to identify them, and identified this individual as an eastern quoll. The quoll was hand captured (to check for injuries) and photographed (on a phone), as the animal had no apparent injuries it was released. This species is typically very difficult to hand capture. The sighting was not reported at the time due to concerns about the welfare of the animals. Based on the photo the animal is likely to be a >1 year male (in good body condition) as indicated by size, time of year and head morphology. The photo provided has no EXIF information (so GPS coordinates were not	H^

		<p>available, although this feature was not enabled on the phone according to the photographer) nor are any landmarks visible to allow the location to be accurately relocated.</p> <p>The photograph received is clearly an eastern quoll and species identification has been confirmed was verified by multiple experts. The photographer zoomed in and cropped the original (on a phone) image and sent it via a service that compresses images and removed metadata. As a result of the camera quality (iPhone), low light, cropping and compression the resolution is poor although the image is clearly of a hand held eastern quoll, with the handler standing on a road. Original uncropped and uncompressed images were not able to be obtained from the photographer although a screen capture of the metadata was viewed which included the image date (but no location as this feature was disabled).</p> <p>Independent verification of this sighting with follow up camera trapping is desirable in the Nungatta area and adjacent Coopracambra National Park (VIC). In the general area of the sighting there are two Wildcount camera survey sites which have not recorded quolls of any species (although these use non-meat baits). Wildcount is an initiative of Office of Environment and Heritage NSW to monitor wildlife with cameras. Each Wildcount site has 4 cameras and have been deployed from 2013- 2018 (for >14 days per year) and set in March, April or May. The Wildcount sites are not within typical eastern quoll habitat, however it is possible that dispersing animals may pass these cameras. The Forestry Corporation of NSW also conduct pre-harvest surveys and surveys for research purposes in the region which includes camera trapping in nearby Yambula State Forests and no eastern quolls have been recorded (R. Bilney pers. comm.). The grassy flats surrounded by forest in Nungatta appear to be suitable habitat for eastern quolls.</p>	
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Current study via B. Fancourt	10:10 PM 26 June 2012	Melanie Press*	<p>Near Emmaville, Northern NSW Melanie Press, a wildlife carer reported: “The creature was similar in size and shape to a cat, and it's movement was also catlike (fast, agile and it 'stretched' or lengthened itself when it was moving) but it had a black slightly shaggy coat with white spots that had what looked like tan edges around the white spots, with a slightly 'fluffy' tail (all black).”</p> <p>One eastern quoll was seen on Emmaville Rd, a dirt road a on the north side of Pindari Dam in Severn River wildlife reserve. About 30-35km from Emmaville and not near houses. Estimated height of 6 inches was when the animal was running (animal probably shorter when standing), height estimate measured off post on side of road which it passed closely. Observation date June, so animal presumably would have to be at least a year old. Tail with wiry hairs and all black. When running, tail held horizontally. Ears large and triangular. Face pointy, like the shape of an Antechinus (which she has photographed inside her house previously) but ears not like an antechinus (more like a Brush-tail possum), large and triangular. Black in colour (jet black not dark chocolate brown). She noted that the tan edging on the spot could have been dirt/dust.</p>	M^
Rehberg (<i>in litt.</i> 30 May 2016)	April 2010	Not supplied	<p>Near Torrington, Northern NSW dark/black animal, larger than a rabbit with white spots on the body but not tail. Two witnesses drove over it. Observer saw it for about 3 seconds. Inconclusive without further information.</p>	U
Museums Victoria (2008); Rehberg (2007)	2005–2008	Rayleen Reynolds	<p>Little River, Victoria, three animals (2005 and 2008), near Mt Rothwell Sanctuary, which has a captive population, presumed escapee or offspring of escapee.</p>	X
Rehberg (2007)	2006	Not reported	<p>North of Sydney. Seen by a wildlife worker and friend, seen while spotlighting for 5-10 minutes, immediately recognised it as an eastern quoll, identification later confirmed with a field guide. Inconclusive without further information.</p>	U

<i>Hawkesbury Gazette</i> , 1 November 2006.; OEH Bionet; Rehberg (2007)	25/10/2006	Nicole Palmer	Kurrajong , From <i>Hawkesbury Gazette</i> , 1 November 2006 "They were both dark brown with white spots around its jowl and neck area, 3-4 inches of the tip of its tail was white and it didn't look like a tiger quoll, it was much smaller and less heavy. From her description, NPWS ranger Vickii Lett and University of Western Sydney biologist Professor Rob Close believe Ms Palmer may have spotted two eastern quolls." Observer not a trained ecologist, however the expert review increases the credibility. Rehberg (2007) report that "The witness saw two animals - one large and one small - fitting the description of adult and young."	M^
OEH Bionet and current study	1999–2006	Ashton Fox*	Near Wallarobba Hill, Hilldale (near Dungog) , skilled observer (ex zoo-keeper with military training) confident of this identification. Observed eastern quoll 3 times between 1999–2006. Observed running across the road. Distinguishing features = 1/2 size of a normal spotted-tail quoll, no spots on tail and darker in colour than spotted-tail quoll that he has seen many times. Observer did not get a clear view of the ears or head. AF worked at Taronga Zoo in the early 1970s, primarily responsible for ungulates but also worked in the nocturnal house (which had quolls) on weekends. Has previously reported sightings to OEH and again when he heard about the 1989 specimen. AF aware that the eastern quoll is considered to be extinct and that spotted-tail quoll also occurs in this area.	M^
Current study	~2006	Roly Mach*	Nullo Mountain Rd. Eastern quoll seen at same location feeding on roadkill twice in a short period of time in about 2006, probably late winter/ early spring, about midnight. Observer has caught and relocated spotted-tail quoll from his chicken pen at least 4 times, so he is familiar with spotted-tail quoll. In these observations the quoll was smaller had finer feature (face), no spots on tail, and was dark coloured (seen in headlight for 15 seconds) not ginger coloured like the spotted-tail quoll he has seen previously and looked different to spotted-tail quoll. Spots on the eastern quoll were less obvious than on spotted-tail quoll.	M^
OEH Bionet	21/05/2004	Withheld	Murrays Run (near Bucketty and Olney State Forest) , NSW notes in Bionet indicate: "Easily identifiable, the tail was pointed and had no spots. It was dark grey in colour and	U^

			appeared to be smaller than the spotted quoll. Observer believed extensive clear-felling in the adjacent Olney SF contributed to the sighting, as quolls not seen there before. One animal seen.” Observer not located or interviewed.	
OEH Bionet	1/05/2004	Withheld	Glenbawn Dam (~30km west of Barrington NP) , near main entrance, 300m up on Brushy Hill Ridge, seen in car headlights for a full minute. Animal was black & large (adult) with a large belly. White spots on body, white tipped tail but no spots on tail. 95% sure of ID as eastern quoll as has seen many tiger quolls in past. Observer not located or interviewed.	M^
OEH Bionet	1/03/2003	Withheld	near Middle Brother NP . Possible (but uncertain) as former State Forests staff member who we could not contact, however sighting lacks detail and appears to be part of a general fauna list for the area taken over a two month period. It is unusual that this sighting did not attract more attention, which raises the possibility that this record is not reliable (e.g. could be a data entry error). 3 eastern quoll seen. Observer not located or interviewed.	L
Current study	~2002	Dianne Dadswell*	25 Km N of Grafton near The Pinnacles. Observer is familiar with spotted-tailed quolls and considered this individual much smaller and more delicate.	M^
Current study	~2002	Chris Pavich*	Wollemi NP . Observer ex NPWS ranger who is familiar with eastern quolls, having seen them in the wild in Tasmania. Eastern quoll seen while driving in the evening alongside Hunter Main Trail in the vicinity of Mt Monundilla.	H^
Rehberg (2007)	2000/2001	Not disclosed	Near East Kurrajong Rehberg (2007) reports “Colo, near Sydney, NSW Trapped in a chicken coup; misidentified as tiger quoll at the time, later (2006) learned it was an Eastern quoll 2001 or 2002 n/a Anonymous, personal communication (2006)”. Inconclusive without further information.	U
Current study (Facebook)	Early 2000s at Easter (April)	Boris Branwhite*	Hanging Rock , seen in the early morning at a trout farm surrounded by forest, small head, dark brown coat, tail unspotted, animal small about the size of a ringtail possum. Animal seen for a few seconds before leaving the area quickly. Observer is a botanist (skilled observer) who is also familiar with both species of quoll.	M^

Current study	Late 1990s	Paul Meek	Chaelundi area reports of eastern quoll in this area were investigated however no evidence for their presence was found following two days field work.	U
State Forests Biodata	14/10/1999	Withheld	Eastern Dorrigo Way , recent roadkill. Unable to contact observer who was a State Forests employee. Unclear if specimen was collected, however, it does not appear to have been submitted to a museum nor are other staff that worked in that area familiar with this sighting which is unusual given the significance. Observer not located or interviewed. This sighting not mapped.	L
Rehberg (2007)	~1997	Anonymous	Dungog, Barrington Tops area, NSW Trapped and released Approx 1997 n/a Anonymous, personal communication (2006). Inconclusive without further information.	U
OEH Bionet	30/06/1997	Withheld	Barrington Tops , near Polblue camping Area. Location is near other records, so possible, but no detail on criteria used to identify animal, 1 Eastern Quoll seen. Observer not located or interviewed.	U^
Current study	31 December 1996	Matt Clarke*	Gloucester Tops. The following is paraphrased from an email (9 Jan 2018). M. Clarke was employed by National Parks and Wildlife Service 1997-2010 as a Ranger and Pest Management Officer. The level of detail provided, the period the animal was observed, the experience of the observer and the fact it is shortly (seven years) after a specimen was collected from the area are noteworthy and this observation was assessed as highly likely of being an eastern quoll. Prior to this sighting, I had made five trips to Tasmania 1991-94 bushwalking and climbing and was familiar with both the appearance and differences between Eastern and Spotted-tailed Quolls. Subsequent to this sighting, I have since been involved with targeted quoll surveys in Barrington Tops NP around Barrington Guest House with Michael Pennay in 1997, and several fauna surveys in National Parks and Nature Reserves of the NSW North Coast Region. My experiences during these surveys where I had close contact with up to 20 spotted-tailed, and also through looking at road-killed spotted-tailed quolls, and catching/relocating animals in	H^

		<p>chook pens in at Grafton, South Grafton, Copmanhurst and Tucabia have further convinced me that my identification of an eastern quoll on the 31st December 1996 was correct. I have also made two further trips to Tasmania in 2004 & 2005 where I again saw eastern quolls.</p> <p>After a long day working in Myall Lakes NP on New Years Eve, I was driving to a hut near the Gloucester Tops plateau to meet with 4 friends to see in the new year (possibly Munro's Hut?). The time was approx 10:30–11pm. I was driving at low speed - c.30 km/hr southwesterly on Gloucester Tops Rd, approximately two-thirds of the way between Sharpe's Creek camping area and the hut. A small quoll crossed my path and stopped and sat up (macropod-like) in the middle of the road less than 10 metres in front of my vehicle with its tail flat behind it, nose in the air sniffing and looking towards me. I immediately turned the vehicle off and dipped the lights. It was small - in my description to my friends shortly afterwards, I estimated body length less than 30cm (snout-vent) + tail of roughly same length & I thought it couldn't possibly be more than 1kg, fawn-coloured, bushy tail with no spots, light pink nose. After several seconds observation I attempted to photograph the animal, and with eyes fixed on the animal, I had enough time to reach around behind my seat, get my camera, take it from its case (old-style, film back then), set the flash and was in the process of winding down the window when it decided it had had enough and ran off. Obviously I failed to get a photograph. I estimate I had 20 seconds of clear, close-range observation. I took note of the surrounding habitat and the following day I retraced my steps to try and pinpoint the location. I came up with three possible locations: – 32.048, 151.628 at approx 960m elevation; –32.051, 151.622 at c.1050 m; and –32.053, 151.612 at c.1200 m asl [these locations are 1.6 km apart]. Details were recorded and stuck to a map which several years later I converted from my estimated grid references using a GPS and stuck back on the map, just in case. The habitat was tall open forest, comprising large old-growth Eucalypts 30m+, with tightly held fibrous bark similar to a mahogany (possibly <i>E. fastigata?</i>), no evidence of any recent fires within the previous 2–3 decades. Large tree ferns,</p>	
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			<p>2–4 metres were prominent in the understorey. Thick heath-like groundcover of sclerophyll shrubs to c.1m, ground ferns, and thick hard, strap leaves similar to Lomandra.</p> <p>A few weeks later as the Barrington Tops Ranger, I looked on the Wildlife Atlas for eastern quoll records in the park. From memory there were three in the late 1980s (86–89?) from within approximately 2-3km from my sighting, all by another former Barrington Ranger called John Trudgeon. I was dissuaded from entering my sighting on Atlas by my fellow Ranger at Barrington at the time, who said people would not believe the sighting.</p> <p>Further email correspondence on 8/11/2018 stated that:</p> <p>At that time I was unaware Eastern Quolls were considered probably extinct on the mainland, I knew they were listed as Endangered back then and I naively expected that we (NPWS) might be interested in knowing where I had seen it and maybe do some surveys looking at population size and distribution and health etc. However in describing my sighting less than half an hour later that night to the people I was meeting up with, and again recounting my sighting to Ranger colleagues at Gloucester and Tomaree, I described its size, tail, and movements as being different to a tiger quoll, and my certainty in distinguishing it as an eastern quoll.</p> <p>Although I can't be sure of the exact words I used, I described as “about as big as a northern brown bandicoot”, and “that it couldn't have been more than a kilo tops”. I described it as moving “like a bandicoot”... with “a short hopping gait ... before it sat upright, with its little pink nose in the air sniffing inquisitively in my direction checking me out ... and with its bushy tail out behind it” – clearly bushy and without spots. Regarding its head (and ears) – I described it as “being a fine featured and delicate face; more like a bandicoot than a Staffy” (i.e. meaning not broad like a tiger quoll). I know can't be certain after all these years, but whenever I've talked about it I've had a mental image of its ears being upright and alert, and as it having large ears in proportion to its head. NPWS also had a taxidermied adult male tiger quoll in excellent condition at the (then) NPWS District Office at Raymond Terrace, and when discussing my</p>	
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			<p>sighting with Laurence Penman (still a Ranger at Nelson Bay) I used that for comparison, and listed differences in size and features.</p> <p>Other information used to assess this sighting includes the follow facts:</p> <p>(1) I saw an adult tiger quoll on dusk at White Tree Bay (eastern side of The Broadwater) in Myall Lakes NP on 29-12-96, only two nights prior to my eastern quoll sighting, from a distance of about 5 metres or less. It raided a BBQ of campers I was talking to.</p> <p>(2) Whilst still Barrington Tops Ranger, I was a volunteer assistant/observer to Michael Pennay at Barrington Guest House doing quoll trapping for a couple of nights in mid-April 1997 (three and a half months after my sighting). On the first morning in a trap line of 10 cage traps we caught seven tiger quolls, including a juvenile 750g female (“a long-neck [beer] of quoll” he called her) in one of the traps furthest from base. I spent hours carrying, looking and studying it and making mental comparisons. The tail had no spots but was not as thick or bushy as my sighting. Face was fine-featured but likely stouter. Ears were flattened back against the skull and not as prominent, and it was overtly aggressive (but in a trap so threatened). When released it ran with a different gait</p>	
Maxwell <i>et al</i> , (1996)	May 1996		Northern NSW “Unsubstantiated reports of sightings in several locations in northern NSW over the last 20 years”. See Carrai State Forest and Styx River records below, this statement most likely refers to these sightings.	U
Current study via D Andrew	16/07/95	Withheld	Nowendoc , eastern side of Nowendoc crossing road in state forest, 5–10 ft away from observer. Described as animal with pointed nose, sharp teeth, fawny colour with spots, tail a little bit bushy like a fox, no spots on tail, tail 2/3 body length. Observer not located or interviewed although D Andrew (a quoll expert) received the sighting and was not able to definitively assess if it was a young spotted tail quoll or eastern quoll (as the observer believed it was).	L

OEH Bionet	1/07/1995	Withheld	Dairy Station Creek, Merriangah , Observed in snow gum/black cypress pine woodland. Observer noted a thin, almost rat like tail. 1 eastern quoll seen. Observer not located or interviewed.	U
Current study via Chris Dickman	Mid 1990s (1995 used as approximate date)	Bill Dowling*	Mt Allyn near summit , in the southern foot hills of Barrington Tops range on spur. After the sighting, Bill Dowling and Adam Fawcett did a survey in this area with 15-20 cage traps but no eastern quolls were caught. BD has seen eastern quoll in a zoo and spotted-tail quoll in the wild and on this observation noted: no spots on tail, cute face, small size and sure it was not a spotted-tail quoll (which are common in the area). Skilled observer, as employed as fauna surveyor. 1 eastern quoll seen. C. Dickman reports other sightings of eastern quoll in this general area and notes the areas is a hotspot for spotted-tail quoll.	H^
Current study via Ian McAllen	early1990s (1990 used as approximate date)	Courtney Smithers	Mt Royal , seen by the late Courtney Smithers (Entomologist at the Australian Museum) near his holiday house. While this is a second hand report it has been included as the observer and Ian McAllen were both well aware of the significance of this sighting and a Museum trained entomologist has been assumed to be capable of making a detailed observation of an animal and have access to adequate resources to accurately make an identification.	H^
Current study	before 1995	Rob Parker*	Dorrigo area, Dudurgan eastern quoll seen about 20 years ago in chicken pen, observer sure it was eastern quoll although can't remember details now. He remembers looking at field guide after sighting and confirming identification as eastern quoll. Observer familiar with spotted-tail quoll who were also fond of his poultry.	L
OEH Bionet	31/07/1993	Withheld	Barry Way, Kosciuszko NP , 1 eastern quoll seen. No other details available. Observer not located or interviewed.	U
OEH Bionet, Ecotone (1995)	Before 1992 (1992 used as	Withheld	Adjacent to Barrington Tops NP , near Barrington Guest House on Williams River. 1 eastern quoll seen. No other details available. Observer not located or interviewed. Observer a botanist who did extensive fieldwork in this area.	U^

	approximate date)			
Current study	1990–2001 (1990 used as approximate date)	Andrew Spate*	Driving towards coast on top of Clyde Mountain just before it drops off steeply. Saw eastern quoll on left hand side of road, got a clear look, confident of identification based on previous experience with this species (trapping eastern quoll and spotted-tail quoll in Tasmania).	H^
Chris Dickman	1990s	Withheld	Dungog area , unable to contact observer (former State Forest employee, Chris Dickman reports he is a skilled observer). Due to the general nature of the location this sighting was not mapped.	H
Rehberg (2007)	~1990s	Not supplied	New England area . Rehberg (2007) reports that an amateur researcher recalled an eastern quoll being trapped in the New England area in the 1990s as part of a wildlife monitoring program and it was the amateur researcher's impression that the NSW Parks department was aware of this capture. This observation is not recorded elsewhere e.g. in Bionet or Atlas of Living Australia which given the significance of the sighting is unusual. Not a primary observation, so potentially unreliable. Observer not located or interviewed.	U
Scotts (1992); NPWS (1999); Rehberg (2007); D Pugh pers comm.	~1990–1992	multiple sightings (some observers not identified)	Carraai Forest and surrounding areas, NSW . A number of sightings in this general area occurred in in the seventies, eighties and early 1990s, none of these observers were contacted (except M Clayton), these reports were sourced from published reports and from files held by the Northern East Forest Alliance (NEFA) obtained under freedom of information request from the Forestry Commission. Locations with sightings in the period include: Nulla-Five-Day S.F., Styx River S.F., New England N.P. (according to letters dated 28 Aug 1989 and 12 /2/1990 in NEFA files from the Forestry Commission). Logging of Carraai State Forest was a contentious issue at the time and the presence of the eastern quoll and other threatened species was investigated as a result. Previous fauna survey effort near Carraai is likely to have targeted	

			<p>productive forest ecosystems and there are areas in Carrai that are relatively undisturbed, high elevation and grassy (much like eastern quoll habitat in Tasmania) that are likely to be inadequately surveyed. Records indicate that spotter-tail quolls are frequently recorded in this area. Simon Benson in the Daily Telegraph 11/5/96 reports scientists sighting Eastern Quolls in bushland near Armidale, and by a biologist working for State Forests near the headwaters of the Styx River, this appears to refer to one of the earlier sightings (documented below) rather than a sighting in 1996, but this is not clear. Spark (2004) indicated that foxes had not been recorded in Carrai NP although and Catling and Burt (1995) recorded foxes in Carrai State Forest (near Kookaburra which is a location with an eastern quoll sighting) but note there are location in this area where foxes are at low densities or apparently absent (e.g. at “Northern Region Site 8” in Carrai SF foxes were not detected). The absence of (or low densities of) foxes may be an explanation for persistence of eastern quoll in some areas. Fox densities therefore should be considered in any contemporary survey for eastern quolls, particular if there is evidence of recent increases in fox activity as this may have led to local extinctions.</p>	
			<p>Daisy Plain Forestry Hut</p> <p>Noel Irvine (forestry contractor) reports seeing eastern quoll on early morning drives in Carrai Forest and hand feeding female eastern quoll and near independent litter at Daisy Plain Forestry Hut, sighting were more common in the early summer period (Scotts 1992). Observer reported that eastern quolls were more prevalent in summer period. Observer confident of ability to distinguish eastern quoll from spotted-tail quoll (Scotts 1992). Date uncertain although it was before 1992.</p>	M^
			<p>Kunderang Rd</p> <p>Scotts (1992) reports a sighting by a local landholder Lindsay Youdale (NEFA records indicate this was on Kunderang Rd on 12 July 1992, D. Pugh pers. comm.) although there is no description of the animal. As noted in relation to the Carrai Stranger and Clayton record below</p>	L

			<p>some female spotted tail quolls would be the same size as an eastern quoll at this time of year which could lead to a misidentification with an untrained observer although this cannot be verified. This location is not mapped in Figure 1.</p> <hr/> <p>Carrair Road near Waterfall Road</p> <p>Also found in NEFA archives (letter dated 1/8/1990 to the Forestry Commission) is a sighting from CSIRO (M. Stranger, M. Clayton) who reported to Forestry Commission an eastern quoll sighting. The animal reported is consistent in appearance with an eastern quoll in both size, shape and colour, the sighting occurs nearby another credible reports, there were multiple (2) skilled observers, the conditions were good and the observation was close range, one observer had previous experience with quolls, they had access to good resources (e.g. reference specimens), they were professional ecologists, the sighting is well documented, they sort external advice (contacted J. Caughley) and they were aware that this sighting was important and unusual. In July some young female spotted-tail quolls in poor body condition would weigh 1000g and female spotted tail quolls also have a more pointed face than males and it is possible that this could result in identification error, but given M. Clayton’s experience this is unlikely. The colour “pale ginger cream” could describe either species of quoll. M. Clayton when interviewed (Jan 2019) stated he was certain at the time of the sighting it was an eastern quoll (based on face shape, general appearance, size and an unspotted white- tipped tail). He has seen about 300 spotted-tail quolls in the wild (in the general area), and also eastern quolls and northern quolls in the wild. After this sighting attempts were made by P. Catling and R. Burt to capture this animal however only cats were captured.</p> <p>The letter reads: “An animal identified as most likely of this species [eastern quoll] was sighted on Carrai Road near Waterfall Road north east of Kookaburra Forestry Camp [approx. location 152.21.00 E 31.01.00 S] at 1130 hours July 17 1990.</p>	<hr/> <p>H^</p>
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		<p>It was first seen sunning itself (the day being sunny and calm) in the centre of the road as our vehicle was preceding towards Kempsey.</p> <p>A description of the animal at the time was as follows. Approximately the same size as a very small domestic cat (around 1000g) elongated body (slim ferret like), long pointed face. The colour was a pale ginger cream with white spots on the body. The tail was fairly thin, the same colour as the body and without the white spots, The lack of spots on the tail is noted as an important distinguishing characteristic (J. Caughley).</p> <p>The animal lay on the road, head and front of body raised on front legs, abdomen and rear legs flat, and at our approach sat up and remained sitting until our vehicle stopped (approximately five metres from the animal). It then stood and slowly walked off the road into ferns on the road edge turning several times to look at us.</p> <p>On our return to Canberra specimens from the Australian National Wildlife Collection at the CSIRO Division of Wildlife and Ecology were examined. All the examples of the Spotted-tailed Quoll (<i>Dasyurus maculatus</i>) were a much darker brown to ginger body colour with heavy spotted tail, the head also appeared shorter and broader. All specimens of the Spotted-tail Quoll were up to three times larger. Pending capture and a closer examination of a specimen. The unlikely possibility nonetheless is that the animal sighted may have been a juvenile of the Spotted-tail Quoll.</p> <p>The habitat in which the animal was sighted consisted of, on the eastern side of the road an extensive rain forest gully and on the western side an association of <i>Eucalyptus andrewsii</i>, <i>E. saligna</i> and <i>E. laevopinea</i>.</p> <p>One of the observers (MC) is familiar with the Spotted-tail Quoll having seen it regularly during survey work in the Chaelundi and Styx River State Forests and in open agricultural country surrounding the Riamukka forestry camp near Nowendoc. All the quolls seen by him</p>	
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		<p>were a rich dark chocolate brown, were much heavier in the body and had a much blunter “Tasmanian Devil” like face.</p> <p>Prior to our sighting the Forestry office in Kempsey report several sightings of an animal tentatively identified as the Eastern Quoll (pers. comm. John Gwalter)</p> <p>M. Stanger M. Clayton CSIRO Division of Wildlife Ecology”</p> <p>Rehberg (2007) quotes relevant to Carrai</p> <p>In relation to the Carrai Rd CSIRO sighting Rehberg (2007) present the following “In answering the Honorable I. Cohen's question in NSW parliament, the Honorable J. W. Shaw cites the Minister for Land and Water Conservation as advising that State Forests is aware of a CSIRO sighting of this species from a vehicle in Carrai State Forest more than 5 years prior to May 1996. Extensive surveys were undertaken by a number of organisations including CSIRO without any further evidence of the species.”</p> <p>Rehberg (2007) also include the following (which presumable relates to the CSIRO Stanger and Clayton sighting) to “In a NSW parliamentary hearing, the Honorable I. Cohen asked the Honorable J. W. Shaw about an Eastern quoll sighting reported in mainstream media on 11 May 1996. The news article, in the Daily Telegraph was written by Simon Benson and described biologists employed by State Forests sighting an Eastern quoll in a forest in northern NSW. The Honorable J. W. Shaw's reply was made in November 1996 and cites the Minister for Land and Water Conservation saying that biologists employed by State Forests have not recorded any sighting of this species in this area. Further, the National Parks and Wildlife Service has not advised State Forests of this species in this area.”</p>	
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Current study	Between May 18 and June 4, 1992 (exact date uncertain)	Brian Tomalin*	Ben Halls Gap , 700 Shearers Rd Ben Halls Gap (now national park), Brian lived at this location for 36 years and during this time he saw many spotted-tail quolls. The eastern quoll was seen running away quickly at 4pm, probably in spring. Brian saw the whole animal but can't recall the head shape or ears. The quoll was lighter in colour than a typical spotted-tail quoll. The colour was a light brown/dark fawn, no spots on tail. It ran up a steep hill into a rocky area where it took shelter. Smaller than an adult spotted-tail quoll. Based on the information spotted-tail quoll cannot be ruled out as a light coloured young spotted tail quoll would also fit this description. The property had rabbits but never in any great number. The timing was determined by a note made in a diary. Observer was familiar with quoll research being undertaken by Gerhard Körtner and Peter Watson and was familiar with quolls and therefore confident of his identification. He had not reported sighting at the time but upon hearing about the 1989 specimen thought it was worth reporting.	L^
Frankham <i>et al.</i> (2017)	Winter 1989	Ray Dean	Barrington Tops (AM47902), Roadkill. Identity unambiguously confirmed.	H^
Ecotone (1995)	1988	State Forests	Mountain Maid Mine, Copeland Tops State Forest . The observer had good knowledge of fauna and follow-up investigations were likely performed (R Kavanagh pers. comm).	M^
Rehberg (2007)	1986	Not supplied	Nowra, NSW . Eastern quoll seen near a picnic area in Minnamurra Falls National Park near Nowra in view of hundreds of visitors plus park rangers. Witness at the time of sighting did not know the difference between the eastern and spotted-tail quoll and based identification on size and colour (lighter brown colour). Insufficient information available to substantiate this sighting. Observer not located or interviewed. Inconclusive without further information.	X
Rehberg (2007)	1980	Not supplied	Casino, NSW From Rehberg (2007) "I have been informed of an account that comes from Casino in about 1980. Allegedly an eastern quoll was found to have killed 32 fowl on a property over the course of 2 nights. Traps were laid and the animal was caught. The farm owners were sympathetic and released the quoll at a more remote location, but not before	U

			taking photographs.” These photographs have not been located or reviewed. Observer not located or interviewed. Inconclusive without further information.	
OEH Bionet	30/10/1981	Andrew Spate*	Barry Way, Kosciuszko NP Observer familiar with eastern quoll and spotted-tail quoll having trapped both in Tasmania. 1 eastern quoll seen.	H^
OEH Bionet	28/09/1981	Withheld	Repeated sightings at Towlers Bay, Ku-ring-gai Chase NP . Note this is a busy park and has been well surveyed in recent times, spotted-tail quoll are still present but now uncommon. Observer not located or interviewed.	U^
Robinson (1988)	1980	Not reported	Cambewarra Pass, road to Kangaroo Valley, Near Robertson , observer familiar with both species of quolls stated he had killed one in his fowl yard about 1980, near Robertson within 3 or 4km of the 1970 sighting also reported in Robinson (1988). Observer not located or interviewed.	M^
OEH Bionet	4/07/1978	Withheld	Kosciuszko NP , observed, no other details. Observer not located or interviewed.	U^
Harden and Hardman (1995); B Harden Pers Comm.	Late 1970s	Ned Gilkinson	Styx River State Forest area, Georges Creek . An eastern quoll was seen in Georges Creek near Gilkinson’s property (Davies, pers. com.) in the late 1970s (Mountain Home, Georges Creek; house at ~56 J 424700/6603400). The eastern quoll seen in the chook pen. The Gilkinsons knew the difference between the two species and had probably been seen quolls in the chook run for a couple of generations. Bruce Davies interviewed the Gilkinsons and confirmed the identification from the description.	H^
Harden and Hardman (1995); B Harden pers. comm.	1977	John Robertshaw	Styx River State Forest area . in 1977 a single animal was seen by John Robertshaw near the Kempsey road on two different nights, months apart (Robertshaw and Bradley, unpublished). The location was on the Armidale –Kempsey Road near Newells Culvert and it was seen while spotlighting on winter nights (~56 J 422700/6611700 (GDA94)). John Robertshaw is a skilled observer who worked with Bob Harden.	H^
Caughley (1980)	1977	Not reported	Mt Baldhead, Victoria	U

Current study	1976	John Trudgeon*	Barrington Tops area eastern quoll seen on old Thunderbolts Road, near Polblue and Little Murray Depot. Monte Newton also present at this observation but probably unaware of significance. At this time it was a very minor road. Quoll escaped down rabbit hole after running across road and into windrows. JT later tried to trap it unsuccessfully. Was reported at the time but no one took the record seriously. John collected scats (these were 100% rabbit fur) with Anthony Rose whose collection was later sent to the Australian Museum, these scats could not be located in 2016. Bush regenerators and rabbit trappers working in the employment relief teams based out of the Little Murray Depot reported to JT seeing quolls which matched the description of eastern quoll. Spotted-tail quoll also occurs in this area so these sightings could be either species as these teams were not skilled observers. JT had seen eastern quoll at Vaucluse so was familiar with this species and his personal observations are considered to be reliable.	H^
OEH Bionet, Ecotone (1995)	19/11/1974	John Trudgeon*	Barrington / Gloucester Tops area 3 entries with low spatial accuracy in Bionet separated by about 17 Km., possible duplicates of the 1976 record.	U^
OEH Bionet	31/07/1973	Eric Worrell	Gosford area , the following details from paper atlas card: "Skin number 74, also skull number 95, skin details- originally trapped at Gosford Area, then died in captivity, found in E. Worrells deep freeze, female, WT585, L557, HD57, EAR48, ARM65, LEG85, FT60, TAIL227, EYE10, mammae 6 and not used." Specimen located AM32775 registered at Australian Museum in Nov 1996, this is the time that the park relocated from Wyoming to Somersby. The background information associated with this record is unreliable (G Ross pers. comm.), and the Australian Reptile Park lost many of their records in a fire. John Weigel (pers. comm.) contacted staff who were working at the park at the time and considers that a wild-caught mainland eastern quoll would have been notable, yet was not remembered. It is likely that this was a captive animal imported from Tasmania however this has not been verified.	X

Current study	~1972	John Trudgeon*	Byadbo wilderness, Snowy Mountains 1969-74 (probably 1972) in box/ callitris, near Walkers Hut and Sandy Flat. Box/ callitris uncommon in this area. Eastern quoll seen on the eastern side of the lower Snowy River about ¼ mile from river in area between Jacobs and Pinch rivers. 1 eastern quoll seen. Note: extensive work on spotted-tail quolls by Andrew Claridge and his colleagues has been undertaken in this area, there is no current evidence that eastern quoll remain in this area.	H^
B Harden pers. comm.	Early 1970s	Ron Diamond	Styx River State Forest “In the early 1970s I also recall discussing quolls with the late Ron Diamond of Jeogla who held grazing leases in the northern part of the Styx River State Forest. Ron was adamant there were two different types of quoll in the area, one with, and one without, spots on the tail. He reported the latter (eastern quolls) were in the drier country rather than wet forests.”	M
Harden and Hardman (1995); B Harden pers. comm.	1970	Bob Harden*	Styx River State Forest. In 1970 a single animal was seen by Bob Harden at 2am on a winter morning on Point Lookout Road 50 m west of the Little Styx River bridge about 2 am in winter (~56 J 459200/6624800 (GDA94)). This sighting is also mentioned in a letter from the Forestry Commission dated 12/2/1990 in NEFA files (D. Pugh Pers Comm.). Harden is considered to be a highly skilled observer and he worked extensively in this area.	H^
Robinson (1988)	1970	not identified	Robertson 3 different people at the same location, observers not identified, mentioned in passing in Robinson (1988). Observer not located or interviewed.	U
Rehberg (2007)	1970s	Venour Nathan and Gary Opit	Vaucluse area Rehberg (2007) reports that Mr V Nathan reported to Mr G Opit that a family of eastern quolls “continued into the early 1970s on a private property just south of Nielsen Park beside the harbour.” The lady who owned the property used to feed them in her garden.”	U
Taronga Zoo	11/04/1970	Anonymous	Donation received on 11 Apr 1970 “(via NPWS) Kogarah ” of a male eastern native cat, this animal escaped on May 18 1970.” Unlikely to be a wild eastern quoll given location and year, one possible explanation is the seizure of an illegally held captive animal. There was no NPWS office at Kogarah in 1970 or at any other time (D Lunney pers. comm.).	X

OEH Bionet	1/08/1970	Anonymous	Kosciuszko NP, Thredbo observed, no details	U^
Maxwell <i>et al.</i> (1996)	1966		Vaucluse NSW “The last mainland sighting was in 1966 in Vaucluse (Sydney).” This extends the last known date at this location a few years, however no detail is provided.	U
Hersey pers. comm. (in Ecotone 1995)	1964	not identified	Vaucluse area. A pair of eastern quolls are reported to have been removed from a house in Vaucluse and released in Muogamarra Nature Reserve	U
Rehberg (2007)	post 1963?	Gary Opit	<p>Sydney area via Taronga Zoo Rehberg (2007) reports Gary [Opit] notes that "for years after [Mr Nathan discovered the 1963 roadkilled quoll], they still had 2 or 3 at Taronga Zoo in an enclosure directly opposite the main entrance ... I have an 8mm video of the enclosure and these almost certainly were the last known survivors. Because they never had quolls before this time ([and] I visited the zoo many times every year and knew every animal there), I was particularly excited at the display of spotted-tailed and Eastern quolls</p> <p>“I asked the keeper where the Eastern quolls came from and he told me Vaucluse and Lane Cove and [that they] were animals that had been collected from people's houses who had contacted the zoo to remove them.”</p> <p>Taronga Zoo built 2 or 3 of these open rectangular pits, about 3 metres wide and 7 metres long for tiger cats (spotted-tailed quolls) and native cats (eastern quolls) in the early 1960s; built of concrete but coloured and shaped to look quite natural with lawn, plants and logs ... two dens at the end and two concrete logs running to the lawn and pool from the dens two metres above the ground.”</p> <p>Authors note: Taronga Zoo have an archived image of eastern quolls at Taronga in 1916 and arrival records of Native cats from the 1940's, 1950's and 1961 from Sydney (including Vaucluse in 1961). In 1963-64 and again 1965 Taronga held eastern quolls from Tasmania, enroute to the USA. One specimen from Taronga Zoo M10935 registered in Jan 1978 with no other details of the location it was obtained from was located at Australian Museum. Taronga</p>	U

			<p>Zoo records indicate this animal was most likely received from NPWS Tasmania on June 14, 1977 and then died on 17 Oct 1977. Animal Identified as “A3536”.</p> <p>In 1978 Women Weekly printed the following “The hospital cares for sick or injured zoo inmates and quarantines new arrivals for 30 days while tests are carried out to ensure they are free from disease and parasites. It opened last December, with veterinary surgeon Dr Ted Finnie in charge. Another veterinarian, Dr Gary Radcliffe, runs the native animal care unit sponsored by the National Parks and Wildlife Foundation. “We get lots of native cats and koalas which have been illegally caught in rabbit traps” said Dr Finnie. “Other animals have been orphaned by shooters.”</p> <p>There is no evidence of wild eastern quolls in the Taronga Zoo records, however the records for animals admitted to the Taronga Wildlife Hospital are not complete in this time period as only records of animals in the Taronga Zoo collection are now available. Given the timing these records are unlikely as zoo staff would have recognised that any eastern quoll record was unusual and this would have been widely publicised.</p>	
Robinson (1988)	31/12/1968	Anonymous	Clifton , roadkill 1 eastern quoll.	U^
Robinson (1988)	1968	Anonymous	Above Coledale (not mapped as the record is in close proximity to the Clifton record above)	U
OEH Bionet, Robinson (1988)	30/06/1966	Anonymous	Bulli Pass , Road kill, 3 individuals run over in June 1966. Another animal subsequently killed by car at almost same location that Robinson closely examined. Observer not located or interviewed, however Robinson appears to be a skilled observer which is why the reliability score is H	H^
Robinson (1988)	1966	Anonymous	Red Hill in 1964, no details	U
Robinson (1988)	1966	N Robinson	Cataract Creek (Illawarra) , examined by Robinson, presumably a dead animal. Observer not located or interviewed, however Robinson appears to be a skilled observer which is why the reliability score is H. Mapped location indicative.	H^
Robinson (1988)	1964	Anonymous	near Meryla in 1966, no other details.	U

Australian Museum; Dickman <i>et al.</i> (2001); Peacock and Abbott 2014	31/01/1963	C.V. Nathan	Vaucluse , verified specimen (AM8382). Peacock and Abbott (2014) quoting C.V. Nathan report that the last sighting was 1964 and that cat predation, wildfire in the western part of Nielsen Park, removal of tick bush (<i>Kunzea ambigua</i>) from the northern end of Nielsen Park, ongoing drought (which dried up soaks) and clearing of private land in Olola Avenue were linked with local extinction. Caughley (1980) reports the burning of <i>Lantana</i> in Nielsen Park in 1964 is assumed to have led to the final demise of eastern quoll at Vaucluse. Eastern quolls were common in the area in the 1930s and 1940 but declined in the 1950s when development accelerated. Rehberg (2007) reports possible sightings of eastern quoll in this area in the 1970s and Maxwell <i>et al.</i> (1996) list the last sighting as 1966. Mr John Trudgeon, a retired National Parks and Wildlife Service (NPWS) employee, reported that at Vaucluse in the 1950s and early 1960s eastern quolls were considered a pest by some as they entered houses. He assumed they remained common in more remote areas, so the importance of their disappearance from urban areas was not apparent at the time.	H^
OEH Bionet	31/01/1962	Norm Robinson	Bulli Pass . 1 road kill animal. Observer not located or interviewed. May be a duplicate of one of the Robinson (1988) records between 1964–1968.	U
Rehberg (2007)	About 1960	Gary Opit	Rose Bay (NSW)	U
P. Menkorst cited in Woinarski <i>et al.</i> (2014)	Early 1960s, possibly later		Kew (NSW)	U
P. Menkorst cited in Woinarski <i>et al.</i> (2014)	Early 1960s, possibly later		Ivanhoe (Melbourne)	U
Robinson (1988)	1960s		near Robertson and the rims of Kangaroo Valley	U

Caughley (1980)	1960s		Wilson's Promontory, Victoria	U
OEH Bionet, Robinson (1988)	31/12/1956	Norm Robinson	Old Port Kembla Road , 1 road kill animal	U^
Caughley (1980), Godsell (1983) NPWS (1999), Rehberg (2007)	Unknown (before 1980)	Foresters (unidentified)	North of Sydney (Wyong and Cessnock) . Seen occasionally, but the observers were not able to trap individuals to confirm sightings.	U

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